

REMARKS

Status of Claims: Claims 1-28 are pending in the present application. Claims 1-28 have been rejected in the Final Rejection dated May 21, 2007. Claims 1, 3, 8-11, 13, 17-19, 21, 22, and 24-26 have been amended. Upon entry of the current amendments, claims 1-28 will be pending. Reconsideration of the Office Action of May 21, 2007 is requested in view of the above claim amendments and the following remarks.

Claim Rejection -35 USC §102:

In the Final Rejection, claims 1, 2, 4-12, 14-20, 22, 23 and 25-28 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Ortn et al. (US Patent 5,841,124). According to the Final Rejection, Ortn et al. discloses all the features of the rejected claims.

The standard for anticipation under 35 U.S.C. §102(b) is one of strict identity. An anticipation rejection requires a showing that each limitation of a claim be found in a single reference, *Atlas Powder Co. v. E.I. DuPont de Nemours & Co.*, 224 U.S.P.Q. 409, 411 (Fed. Cir. 1984). Applicant maintains that the current grounds for rejection of the claims can not stand because Ortn et al. fail to disclose each and every limitation of the amended independent claims and therefore there can be no anticipation of the claims under 35 U.S.C. §102(b) (see *e.g.*, Remarks in the Response dated April 18, 2007 at pages 3-12).

However, in an attempt to move prosecution of the present application forward, and hopefully to an allowance, applicant has amended the claims to more fully distinguish the claimed subject matter over the cited references.

In the Final Rejection, the examiner suggests that the claims be amended to explicitly define the claimed “digital gradient filter.” In response, applicant has amended the independent claims to more fully define the claimed digital gradient filter and characteristics of that claim limitation. For example, claim 1 has been amended to recite, in part:

applying a digital gradient filter to at least some of the pixel values of the first digital image to obtain a focus score for the first digital image;
the digital gradient filter comprising a combined gradient and smoothing operator that carries out both gradient and smoothing

operations in one pass; wherein the smoothing operation has a settable spatial extent.

Independent claim 11 has been amended to recite, in part:

the auto-focusing mechanism having a combined gradient and smoothing operator applied in one pass to at least some of the pixel values of the first digital image and to obtain a focus score for the first digital image, wherein the smoothing function has a settable spatial extent.

Independent claim 22 has been amended to recite, in part:

the mechanism comprising: a digital gradient filter to filter at least some of the pixel values of the digital image to obtain a focus score for the digital image, the digital gradient filter comprising a combined gradient and smoothing operator applied in one pass, wherein the smoothing function has a settable spatial extent.

As such, each of the independent claims has been amended, as suggested by the examiner, to more clearly define the claimed digital gradient filter and to recite that the combined gradient and smoothing operator are carried out in one pass. It is submitted that the cited references do not disclose or teach the claimed features.

Hence, independent claims 1, 11, and 22 of the present application are not anticipated by Ortyn et al. because the Ortyn et al. reference does not disclose all of the limitations recited in those claims. Reconsideration of the present claim rejections under 35 U.S.C. §102(b) is requested in view of the above claim amendments, and applicant requests that the examiner give patentable weight to all the recited claim limitations. In addition, dependent claims 2, 4-10, 12, 14-20, 23 and 25-28, which depend direct or indirectly from independent claims 1, 11, and 22, are also allowable over Ortyn et al. for the reasons stated above with respect to independent claims 1, 11, and 22. Accordingly, withdrawal of the rejection of claims 1, 2, 4-12, 14-20, 22, 23 and 25-28 under 35 U.S.C. 102(b) is solicited.

Claim Rejection -35 USC §103:

Claims 3, 13, 21 and 24 are rejected in the Final Rejection under 35 U.S.C. 103(a) as allegedly being unpatentable over Ortyn et al. (US Patent 5,841,124) in view of Hartman (US Patent 4,592,089).

While applicant maintains that the pending claims were not unpatentable over and in view of the cited references, applicant has amended the claims in order to attempt to advance prosecution of the present application to allowance. In particular, independent claims 3, 13, and 24 have been amended in the manner suggested by the examiner – *i.e.*, to include limitations similar to independent claims 1, 11, and 22. For example, independent claim 3 has been amended to recite, in part:

applying a digital filter comprising a combined gradient and smoothing operator to at least some of the pixel values of the first digital image to obtain a focus score for the first digital image; wherein the combined gradient and smoothing operator carries out both gradient and smoothing operations in one pass; wherein the combined gradient and smoothing operator is defined by the linear correlation or convolution of the pixel values with a mathematical smoothing function having a negative and positive lobe around the origin thereof, the mathematical smoothing function having only one zero crossing and being limited in spatial extent in that it extends over a distance smaller than or equal to the image size and extends at least over three pixels either side of a pixel whose value is being filtered.

Independent claim 13 has been amended to recite, in part:

the auto-focusing mechanism having a digital filter comprising a combined gradient and smoothing operator applied to at least some of the pixel values of the first digital image to obtain a focus score for the first digital image; wherein the digital filter carries out both gradient and smoothing operations in one pass; wherein the combined gradient and smoothing operation is defined by the linear correlation or convolution of the pixel values with a mathematical smoothing function having a negative and positive lobe around the origin thereof, the mathematical smoothing function having only one zero crossing and being limited in spatial extent in that it extends over a distance

smaller than or equal to the image size and extends at least over three pixels either side of a pixel whose value is being filtered.

Independent claim 24 has been amended to recite, in part:

the mechanism comprising: a combined gradient and smoothing operator applied in one pass to at least some of the pixel values of the digital image to obtain a focus score for the digital image wherein the combined gradient and smoothing operation is defined by the linear correlation or convolution of the pixel values with a mathematical smoothing function having a negative and positive lobe around the origin thereof, the mathematical smoothing function having only one zero crossing and being limited in spatial extent in that it extends over a distance smaller than or equal to the image size and extends at least over three pixels either side of a pixel whose value is being filtered.

As noted above with respect to the arguments under the rejection of claims 1, 11, and 22 as allegedly being anticipated by Ortyn et al., the Ortyn et al. references fails to disclose or teach the recited limitations relating to the claimed digital gradient filter and/or to recite that the combined gradient and smoothing operator are carried out in one pass. Hartman fails to remedy the deficiencies of the above-noted Ortyn et al. reference.

For the Examiner to make a rejection based on obviousness, 35 U.S.C. § 103(a) and MPEP § 2141 require adherence to the following tenets of patent law: (A) The claimed invention must be considered as a whole; (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination; (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention and (D) Reasonable expectation of success is the standard with which obviousness is determined.

To establish a prima facie obviousness, MPEP §2142 requires there must first be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references when combined must teach or suggest all the claim limitations. The teaching or

suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.

Accordingly, Applicant submits that combination of Orty et al. and Hartman fails to establish a *prima facie* case obviousness because the combination does not teach or suggest all of the claim limitations of the amended claims. As such, there is no reasonable expectation of success. Withdrawal of the rejection of these claims under 35 U.S.C. 103(a) is requested.

Response to the Examiner's Response to Arguments:

Applicant maintains that the examiner has misinterpreted the disclosure and teaching of the cited references, as well as, the claimed subject matter. Examples of this misinterpretation can be found in Remarks of the Response dated April 18, 2007, which are incorporated herein by reference in their entirety (see Response dated April 18, 2007 at pages 3-12).

For example, Orty et al. do not disclose a digital gradient filter (see *id.* at pages 3 and 6-7). Also, as argued on page 8 of the Response dated April 18, 2007, Orty et al. does not disclose a smoothing function having a settable spatial extent. Again, the examiner misinterprets Orty et al. The Orty et al. reference discloses a well known method to bypass side-effects of filtering at the border of the image, where the filter falls partly outside the image array. See for example the handbook of Forsyth and Ponce, "Computer Vision," or Russ, "The Image Processing Handbook." It has nothing to do with smoothing with a settable size. Smoothing with a settable size is not disclosed in Orty et al. Moreover, the examiner should realize, as one of ordinary skill in the art surely would, that claims 1, 11, and 22 include contrast filtering, as the contrast is the result of the claimed digital gradient filter, and specifically, the gradient operation in the combined gradient and smoothing operator (see *id.* at page 9). In addition, the claimed step of continuous moving the object relative to the optical instrument along the optical axis is not disclosed by Orty et al. (see *id.* at page 10).

Further, in view of the amendments to the claims, and in particular the amendments to the claims suggested by the examiner, it is respectfully submitted that the amended claims define

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over the art of record. As such, applicant does not respond to each point raised by the examiner in the Response to Arguments on pages 2-13 of the Final Rejection.

CONCLUSION

It is respectfully submitted that each and every claim pending in this application patentably defines over the prior art of record. For all the foregoing reasons, Applicant respectfully submits that the instant application is in condition for allowance. Reconsideration of the present Office Action and an early Notice of Allowance are respectfully requested.

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